Space Weather Forecast

Issued on Saturday, 27 May 2023 at 13:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: R1/R2 radio blackouts likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with a Moderate-class flare peaking at 26/2303UTC from a region near south centre disc. This region remains by far the largest and also most complex on the disc. A region in the northwest quadrant also appears to have developed some magnetic complexity. The remaining regions are either small and simple or are currently stable.
A Coronal Mass Ejection (CME) observed leaving the south of the Sun on coronagraph imagery late on 26 May is still being assessed, but is considered unlikely to have a significant impact at Earth.

Solar Wind / Geomagnetic Activity: Solar winds showed a declining coronal hole fast wind. The wind speed has eased slightly and is currently slightly elevated just above 400 km/s. Total interplanetary magnetic field strength is weak, with the north-south component also varying weakly. eomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is forecast, mainly due to the configuration and development of the complex region near south centre disc but with an increasing risk from a smaller region in the northwest quadrant. There is a slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 25 May may arrive at Earth either 29 or 30 May, but confidence is low. Otherwise the current fast solar wind is expected to ease through 27 and 28 May, with a further fast solar wind then expected to connect on 29 or 30 May and could coincide with the possible CME arrival. Mainly Quiet with some Unsettled intervals possible throughout the period. A slight chance of G1/Minor Storms on 29 or 30 May.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight chance of reaching the S1/Minor Storm threshold should any larger flares occur, mainly from the large region in the south.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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